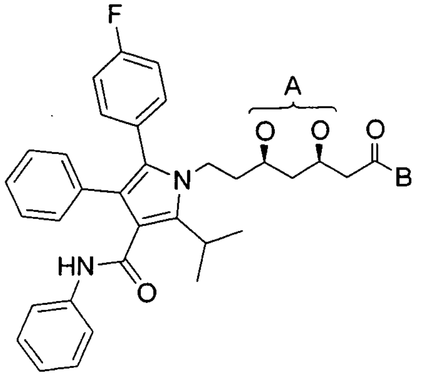
We claim:

1. A process for preparing a pharmaceutically acceptable atorvastatin salt in non-crystalline form, which comprises:

a) providing a solution in a non-hydroxylic solvent of a compound of formula (I)



(I)

where

A denotes a common protecting group or separate protecting groups for the two hydroxy groups, and

B denotes a carboxylic acid protecting group;

b) deprotecting the two hydroxy groups;

c) deprotecting the carboxylic acid group; where steps b) and c) may be performed in either order;

d) optionally concentrating the solution to not more than half its initial volume;

e) adding water to the optionally concentrated solution;

f) adding a solvent which is slightly miscible or immiscible with water and in which the pharmaceutically acceptable atorvastatin salt is insoluble or practically insoluble, in an amount not less than the water volume added in step e);

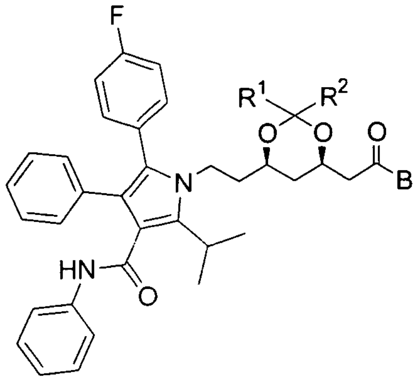
g) optionally mixing the phases, and then separating the two phases;

h) neutralizing the aqueous phase;

i) converting atorvastatin in the aqueous phase to the pharmaceutically acceptable salt; and

j) precipitating the pharmaceutically acceptable atorvastatin salt in non-crystalline form.

2. The process of claim 1 where the compound of formula (I) is a compound of formula (II)



(II)

where

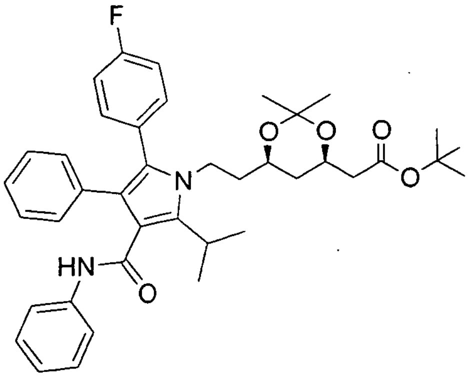
R^1 and R^2 are independently hydrogen, alkyl of from one to three carbon atoms, or phenyl, or R^1 and R^2 together form an alkylene of four or five carbon atoms, and

B is

a) OR^3 where R^3 is straight or branched chain alkyl of from one to eight carbon atoms, cycloalkyl of from three to six carbon atoms, or aralkyl, or

b) NR^4R^5 where R^4 and R^5 are independently straight or branched chain alkyl of from one to ten carbon atoms, cycloalkyl of from three to seven carbon atoms, or R^4 and R^5 together form an alkylene of from four to six carbon atoms of which one or two carbon atoms may be replaced by hetero atoms, optionally substituted with one or more alkyl groups of from one to four carbon atoms.

3. The process of claim 1 where the compound of formula (I) is a compound of formula (III)



(III)

4. The process of claim 1 where step b) comprises adding an acid and maintaining the solution at from 5 C to 40°C with optional mixing.

5. The process of claim 1 where step c) comprises adding a base to adjust the pH of the solution to from 8 to 13 and maintaining the solution at from 5 C to 40°C with optional mixing.

6. The process of claim 1 where step d) comprises concentrating the solution to from 15% to 50% of its initial volume.

7. The process of claim 1 where step e) comprises adding water in 0.2-fold to 5-fold relative to the volume of the optionally concentrated solution.

8. The process of claim 1 where step e) comprises adding water in 0.6-fold to 1.5-fold relative to the volume of the optionally concentrated solution.

9. The process of claim 1 where step f) comprises adding the solvent in 1-fold to 5-fold relative to the water volume previously added in step e).

10. The process of claim 1 where step h) comprises adding an acid to the aqueous phase to adjust its pH to from 6.5 to 8.

11. The process of claim 1 where step i) comprises heating the neutralized aqueous solution to from 30°C to 40°C, and then adding a 30°C to 40°C aqueous solution of a salt of the pharmaceutically acceptable cation.

12. The process of claim 11 where, after the addition of the salt, the solution is mixed at a temperature of from 10°C to 30°C.

13. The process of claim 1 where the pharmaceutically acceptable salt is the calcium salt.

14. The process of claim 1, where step j) comprises adjusting the temperature of the solution to from 2°C to 15°C to precipitate the pharmaceutically acceptable atorvastatin salt in non-crystalline form.

15. The process of claim 1 where step j) comprises adding a water-miscible organic solvent in which the pharmaceutically acceptable atorvastatin salt is practically insoluble or insoluble.

16. A process for preparing a pharmaceutical formulation containing a pharmaceutically acceptable atorvastatin salt in non-crystalline form, which comprises:

(1) preparing a pharmaceutically acceptable atorvastatin salt in non-crystalline form by the process of claim 1; and

(2) mixing the thus-prepared pharmaceutically acceptable atorvastatin salt in non-crystalline form with a pharmaceutically acceptable carrier.

17. The process of claim 16 where the pharmaceutically acceptable salt is the calcium salt.

18. A process for preparing a pharmaceutically acceptable atorvastatin salt in non-crystalline form, which comprises:

a') providing a solution of atorvastatin lactone in a non-hydroxylic solvent;

b') opening the lactone ring;

c') optionally concentrating the solution to not more than half its initial volume;

d') adding water to the optionally concentrated solution;

e') adding a solvent which is slightly miscible or immiscible with water and in which the pharmaceutically acceptable atorvastatin salt is insoluble or practically insoluble, in an amount not less than the water volume added in step d');

f') optionally mixing the phases, and then separating the two phases;

g') neutralizing the aqueous phase;

h') converting atorvastatin in the aqueous phase to the pharmaceutically acceptable salt; and

i') precipitating the pharmaceutically acceptable atorvastatin salt in non-crystalline form.

19. A process for preparing a pharmaceutical formulation containing a pharmaceutically acceptable atorvastatin salt in non-crystalline form, which comprises:

(1) preparing a pharmaceutically acceptable atorvastatin salt in non-crystalline form by the process of claim 18; and

(2) mixing the thus-prepared pharmaceutically acceptable atorvastatin salt in non-crystalline form with a pharmaceutically acceptable carrier.

20. The process of claim 19 where the pharmaceutically acceptable salt is the calcium salt.